

## RIDDLE OF INDIVIDUALITY

(Review of some of Konrad Lorenz's works)

### Introduction

This work was written 25 years ago, when I first, quite by accident, got acquainted with the works of Konrad Lorenz, the "father" of ethology - the science of animal behavior. His works struck me with their logic and beauty. They, it seems to me, belong to the highest achievements of natural science of our century. (And in the scientific community, Lorenz received, apparently, all possible forms of recognition, including the Nobel Prize.)

For various reasons, my work has not been published until now, but its main incentive - to acquaint a wider circle of people with the excellent research of Lorenz - has survived. Although his popular books have been translated ([1] and [2] in the Literature at the end of [5]), his main works have not been translated and are not popular with us. Lorenz's theory of the "mystery of individuality" - the origin of individual connections between animals, when animals individually recognize each other, become necessary and indispensable for each other - was chosen as the main theme. Ultimately, all human life is based on these relationships. Along the way, other information from ethology necessary for understanding is set out. Unfortunately, in order to reduce the volume, I had to sacrifice many facts from the life of animals and their communities, illustrating the general concepts.

The exposition of the theory of Lorenz and other elements of ethology is taken from the books [3], [4] and [5]. It makes up the content [1-5]. In "Conclusion" I took the liberty of presenting some of the considerations induced by these ideas.

### 1. Instinctive actions.

The behavior of animals is composed of individual actions, which can all be classified into two types, usually clearly distinguishable. Actions of the first type are based on understanding, they are focused on a specific goal, corrected by success in achieving it, and easily modified according to circumstances. Such actions are usually acquired through training. Actions of a different type are always performed stably in the same form, they are inherited, and not created by training. Such actions are called instinctive. These two types of actions correspond to the two ways in which an animal can obtain information about the outside world. One of them is based on the interaction with the outside world of the whole species and the hereditary transmission of information. In the field of behavior, it leads to rigid, inherited instinctive actions. Another way is based on the interaction of the individual with the outside world. It uses information about the immediate environment of the animal and leads to a learning process and behavior based on understanding.

Instinctive actions are often very detailed and their complex combinations give rise to a variety of behaviors, highly adapted to external conditions. A classic example of instinctive action is the construction of a cocoon by a spider. If this work is thwarted, after the base of the cocoon is built and the spider is allowed to continue to work elsewhere, it will build the cocoon without the base. The movements continue even if, due to the heat, the excretory organs of the spider's glands have dried up and do not produce cobwebs. It turns out that in all these situations the number of elementary movements performed by the spider remains unchanged - about 6400. Thus, this action is not controlled by the achievement of the goal (Melkher).

The fact that instinctive actions are inherited and not acquired through training is proved by a number of experiments in which animals were brought up in complete isolation. For example, pigeons raised in narrow pipes, where they could not move their wings, when released, flew no worse than their normally raised peers (Groman). But many actions that are clearly improving are often instinctive in nature. Their better performance is simply due to the maturation of the muscles necessary to perform actions. For example, the chicken is picking grain more and more accurately. B. Hess put on a witty experiment - raised a chicken with glasses that shift the position of the grain. The scatter in the beak strikes becomes less and less - but not around the grain, but where it is seen. Thus, the action is not corrected by success and its execution is not associated with learning.

Such integral actions of the organism as obtaining food or reproduction are not associated with a specific instinct, but are the result of the interaction of a large number of specialized instinctive actions. For example, in a wolf, getting food is the result of applying such instinctive actions as sniffing, tracking, chasing, shaking, killing a victim.

For the most part, each such instinctive action arises under the influence of the pathogen: the smell of prey, the type of female, etc. However, it is by no means a reaction to the influence of the external environment. A number of signs indicate that instinctive actions are a manifestation of a spontaneous impulse that constantly arises in the body. Lorenz compares it to the beating of a heart or the periodic contractions of an earthworm. External stimuli only regulate the manifestation of this impulse.

This is illustrated by Craig's law of lowering the threshold of arousal that induces instinctive action. He set up experiments with pigeons, which were isolated from females for various periods of time. At the same time, it was investigated what substitute objects are capable of causing the actions of the current. After several days of isolation, the male addressed current movements to a female of a different species, which he had not noticed before. A few days later - a stuffed female, even later - a crumpled kerchief, and after several weeks of isolation, his current movements turned to the empty corner of the cage.

One of the manifestations of the spontaneous nature of instinctive actions is of particular importance for the future. The absence of pathogens that "turn on" the instinct, not only lowers the required threshold of irritation. It acts much deeper, causing

anxiety in the body as a whole and a desire to search for appropriate pathogens. This state is called the search state (Appetenzverhaltung). In the simplest cases, it can manifest itself in erratic running, flying, or swimming. However, its forms are not rigid and not inheritable. On the contrary, it is in this place that learning-based actions usually occur and sometimes lead to behavior based on understanding. We can say that in the search state the animal undergoes learning or training, in which the bait is the inclusion of appropriate instinctive actions.

For example, foraging from a falcon mainly consists of instinctive actions. The search state is limited to "random" attempts, which are purely random in nature and have the goal of finding a pathogen that includes complex and varied and instinctive actions in pursuit of prey. After that, the subjective goal of the animal is achieved. The following actions are purely instinctive. On the other hand, in humans, almost all of the activity of foraging belongs to the area of the state of search and consists of purposeful actions based on understanding. Only the actions of chewing, salivation and swallowing remain instinctive. It is they that are associated with a sense of pleasure. At the same time, it is precisely those pathogens that are able to turn on these actions especially well, which are the best causative agents of appetite: swallowing oysters, chewing crispbread, etc. Thus, here, too, the subjective goal is the stimulation of instinctive actions, and not that goal (saturation), which contains the biological meaning of all activity.

By analogy with human sensations and on the basis of observations of animal behavior, it can be concluded that instinctive actions are associated with strong emotional experiences. Apparently, the state of search always has a bright emotional coloring, which is its subjective stimulus.

Apparently, the role of instinctive actions lies in the fact that they enable the animal to solve tasks that are much greater than the associative capabilities of its intellect. That is why instinctive actions and learning-based behavior never meet together to solve the same problem. If an animal is able to solve this problem on the basis of learning, then due to the plasticity of this solution, it will be incomparably more effective.

It is very likely that the presence of instinctive responses often inhibits the development of learning behavior. It is enough to look at the behavior of an otherwise self-critical and clear-thinking person when solving the problem of choosing a bride, which he solves with the help of instinctive reactions of falling in love.

## **2. Rituals**

Julian Huxley was the first to notice instinctive actions of a special type, which he called rituals. This is the name of the instinctive action of a group of (at least two) animals using as material a reconsidered other evolutionarily more ancient action (or their system), which belongs to a completely different circle of life.

For example, various forms of mating in chickens, peacocks and pheasants have the meaning of "courting", but are expressed by the movements with which the male calls

the female to feed (sometimes very schematized). These actions are least ritualized in domestic chickens. The rooster touches its legs and, with characteristic cries, makes pecking movements. A female runs up to them and begins to peck in front of him. Ritualization is manifested only in the fact that the same actions are performed if there is no food nearby. The rooster then pecks any small objects. In pheasants, the male bends down with a loose tail deep to the ground and pecks at the ground. When the female runs up, it freezes in "ecstasy" and only the tail continues its measured movements. In peacocks, ritualization has advanced so far that it is difficult to discern the original basis. The male spreads his tail and takes a few steps back. Then he tilts his tail forward and points with his beak to a certain point on the ground, stretching his neck. However, young males still peck at the ground.

The connection between feeding and ritual courtship is extremely common. The ritualization of the actions of feeding chicks is especially widespread. Many songbirds feed each other during the current period, as if the partner is a chick. He then makes movements with his wings, with which the chicks beg for food from their parents. Even in cuckoos that do not feed their chicks at all, mutual feeding is found as an element of mating. In jackals, wolves and dogs, cubs beg for food from their parents, pushing them with their muzzle. The same pushes to the corner of the mouth are ritualized in adults in greeting. In chimpanzees, parents feed their young with chewed food. Adults greet each other with a kiss.

The ritualization of actions of a different type is associated with the ritual of "inciting" the ducks. Unrealized actions occur when a married pair of ducks (drake and duck) collides with another pair or duck. Often, a duck, carried away by its aggressiveness, rushes too far forward and, frightened, returns under the protection of the drake. At the same time, she turns her head back towards the enemy and threatens him. These actions are plastic and subject to modifications, depending on the degree of intensity of the interacting instincts - fear and aggressiveness. They cause a natural reaction in the drake - it becomes infected with the aggressiveness of the duck and its readiness to participate in a collision increases.

In its most ritualized form, "baiting" is the "offer" of the duck to mate with the drake. The actions took on a completely tough, unambiguous character. The duck swims after the drake and makes rhythmic movements of turning the neck and head first to the left and then to the right. In case of consent, the drake responds with the same ritualized actions of "drinking and symbolic cleaning of feathers." Between these two extreme forms there are a number of intermediate steps, thanks to which one can guess about the connection between them.

The same "setting" ritual is performed after the formation of a pair and serves to strengthen it. If the drake and duck are separated, so that the bonds that bind them are weakened, when they meet, they perform this ritual especially for a long time and intensively. It would be wrong to view the "setting" ritual as an expression of the duck's love or the fact that it gives itself to the drake. The ritual turns into an independent instinctive action and is not a by-product, not an expression of the bond between

animals, but the bond itself. Like any instinctive action, it is associated with the corresponding state of search, which occurs if there are no stimuli that cause the ritual.

Huxley used the term "ritual" to emphasize the generality of human and animal rituals. Of course, there is a deep fundamental difference between them, since human rituals are passed on by tradition and each person is taught them anew. Nevertheless, in humans and animals, rituals functionally play the same role. This explains the fact that they have a number of common features: the chain of actions connecting the group and the external object changes its function and becomes a signal, a message within the group; a long chain of actions, which are plastic and changeable, turns into a rigid, unambiguous symbol. Individual elementary actions lose their variability, ossify. For the sake of increasing the effectiveness of the symbol, individual elementary rituals are emphasized, exaggerated, or their effect is enhanced by rhythmic repetition. Some elementary actions that existed in a non-ritualized form drop out or are preserved in a symbolic form. These features give the ritual the character of theatricality, performance.

This similarity goes as far as striking parallels between animal and human rituals. For example, between the rituals of a wolf pack, preceding the hunt for a large game, when wolves move rhythmically, touching their noses, and the hunting dances of primitives. Or between the ritual of presenting marriage gifts, which exists among many insects and birds, and human mating rituals.

From these parallels, we can conclude that in animals, as in humans, the performance of rituals is associated with a special upsurge of emotions, "warmth of feelings" familiar to everyone who decorated the Christmas tree or his house on Trinity Day with green branches, and which reaches special power in connections with rituals sacred to a certain human group. This is confirmed by the intensity of the state of seeking, which occurs if the performance of a ritual becomes impossible for any reason.

### **3. Aggressiveness**

It seems that the pattern of aggressiveness is the attitude of the predator to the prey. In fact, the behavior of a hunting predator is devoid of all the typical traits of aggressiveness. Anyone whose dog is "mouseing" in the field can see this - it wags its tail with interest, its muzzle is not bared. Dogs look very different in a fight. Most often, aggressiveness is manifested between individuals of the same species. It manifests itself very clearly in connection with the presence of "territory" in animals. Since this phenomenon was discovered in 1920 by Howard in birds, it has become known that it is very widespread. Many animals see part of their living space as their territory, which they protect and mark in a certain way. The territory can be possessed by both individual animals (this is the case with most predators), so are the societies of animals - flocks or herds. When an animal of the same species enters its territory, the "owner" resists it, which is the more violent the closer the place of collision is to the center of the territory. On the contrary, in a foreign territory, the animal has an increased tendency to flee, its aggressiveness decreases. (This is used by trainers, who always enter the cage themselves before letting animals in. Thus, animals are in "foreign territory" and their

aggressiveness is suppressed.) Strictly speaking, the territory of an animal is a secondary concept derived from aggressiveness. This is the place of maximum aggressiveness of the animal, which itself is very variable and depends on a number of factors: whether it has offspring, whether it is in the mating period, etc. When an animal of the same species enters its territory, the "owner" resists it, which is the more violent the closer the place of collision is to the center of the territory. On the contrary, in a foreign territory, the animal has an increased tendency to flee, its aggressiveness decreases. (This is used by trainers, who always enter the cage themselves before letting animals in. Thus, animals are in "foreign territory" and their aggressiveness is suppressed.) Strictly speaking, the territory of an animal is a secondary concept derived from aggressiveness. This is the place of maximum aggressiveness of the animal, which itself is very variable and depends on a number of factors: whether it has offspring, whether it is in the mating period, etc. When an animal of the same species enters its territory, the "owner" resists it, which is the more violent the closer the place of collision is to the center of the territory. On the contrary, in a foreign territory, the animal has an increased tendency to flee, its aggressiveness decreases. (This is used by trainers, who always enter the cage themselves before letting animals in. Thus, animals are in "foreign territory" and their aggressiveness is suppressed.) Strictly speaking, the territory of an animal is a secondary concept derived from aggressiveness. This is the place of maximum aggressiveness of the animal, which itself is very variable and depends on a number of factors: whether it has offspring, whether it is in the mating period, etc. the closer the collision point is to the center of the territory. On the contrary, in a foreign territory, the animal has an increased tendency to flee, its aggressiveness decreases. (This is used by trainers, who always enter the cage themselves before letting animals in. Thus, animals are in "foreign territory" and their aggressiveness is suppressed.) Strictly speaking, the territory of an animal is a secondary concept derived from aggressiveness. This is the place of maximum aggressiveness of the animal, which itself is very variable and depends on a number of factors: whether it has offspring, whether it is in the mating period, etc. the closer the collision point is to the center of the territory. On the contrary, in a foreign territory, the animal has an increased tendency to flee, its aggressiveness decreases. (This is used by trainers, who always enter the cage themselves before letting animals in. Thus, animals are in "foreign territory" and their aggressiveness is suppressed.) Strictly speaking, the territory of an animal is a secondary concept derived from aggressiveness. This is the place of maximum aggressiveness of the animal, which itself is very variable and depends on a number of factors: whether it has offspring, whether it is in the mating period, etc. who always enter the cage themselves before admitting animals. Thus, animals are on "foreign territory" and their aggressiveness is suppressed.) Strictly speaking, the territory of an animal is a secondary concept derived from aggressiveness. This is the place of maximum aggressiveness of the animal, which itself is very variable and depends on a number of factors: whether it has offspring, whether it is in the mating period, etc. who always enter the cage themselves before admitting animals. Thus, animals are on "foreign territory" and their aggressiveness is suppressed.) Strictly speaking, the territory of an animal is a secondary concept derived from aggressiveness. This is the place of maximum aggressiveness of the animal, which

itself is very variable and depends on a number of factors: whether it has offspring, whether it is in the mating period, etc.

According to Lorenz, aggressiveness is a typical instinct (although not all biologists agree with it). To prove this, he and his colleagues cite a number of experiments, mainly with animals raised in isolation, in which aggressiveness towards individuals of their own species could not be developed through learning. Thus, isolated rats and mice are even more aggressive than those raised in society. They immediately attack their own kind, using typical threat and attack techniques for their kind. Aggressiveness has all the features of instinct that we described in the previous paragraphs. For example, spontaneity and a decrease in the threshold of irritation are easy to observe if you bring up fish of various species with high aggressiveness in the aquarium. If there are fish of the same species in the aquarium, attacks are directed at them. If you take them out, then the fish rushes to fish of other species, to which it did not react before (and which are not biologically its competitors), and gradually to less and less similar. The complete absence of fish of the same species can even direct the male's aggression towards the female with whom he mates. Aggressiveness serves a number of functions of primary importance to the species. So, the territory is supported by aggressiveness. A weaker animal can defend its territory from a stronger one, since "at home" it is more aggressive, and therefore stronger. The presence of territories is extremely important in order for individuals of the same species to settle evenly, without creating competition for each other. The complete absence of fish of the same species can even direct the male's aggression towards the female with whom he mates. Aggressiveness serves a number of functions of primary importance to the species. So, the territory is supported by aggressiveness. A weaker animal can defend its territory from a stronger one, since "at home" it is more aggressive, and therefore stronger. The presence of territories is extremely important in order for individuals of the same species to settle evenly, without creating competition for each other. The complete absence of fish of the same species can even direct the male's aggression towards the female with whom he mates. Aggressiveness serves a number of functions of primary importance to the species. So, the territory is supported by aggressiveness. A weaker animal can defend its territory from a stronger one, since "at home" it is more aggressive, and therefore stronger. The presence of territories is extremely important in order for individuals of the same species to settle evenly, without creating competition for each other. The presence of territories is extremely important in order for individuals of the same species to settle evenly, without creating competition for each other. The presence of territories is extremely important in order for individuals of the same species to settle evenly, without creating competition for each other.

Another factor was pointed out by Darwin - as a result of battles between rival males, the strongest acquires a female and leaves offspring. This is how the selection of especially strong males is made, playing the role of protectors and leaders in herds and flocks. In this way, for example, males in herds of baboons are selected, which, in any danger, surround the weaker part of the herd with a wall.

The role of aggressiveness, willingness to selflessly rush into battle, to protect offspring is obvious. This function is especially vividly emphasized by the fact that in animals in which one sex takes care of the offspring, it is this sex that is brightly aggressive. In stickleback, these are males, in dwarf perches, females.

Aggressiveness is associated with one of the main properties of animal societies - the presence of a hierarchy in them - the most important mechanism that gives them stability. Its meaning is that each member of society knows who is stronger and who is weaker than him and, therefore, who should give in to whom without collisions in food, fighting for females, etc. Hierarchy is established very quickly in a group of animals, after very few encounters, often without them at all. Sometimes it leads to a complete ordering of the entire group - the allocation of the senior alpha, the next beta, etc., ending with the last omega. Sometimes the alpha group, the beta group, the omega group are distinguished.

The phenomenon of hierarchy is extremely widespread and useful for the species in many ways. First, it reduces the number of collisions in society, prevents its disintegration. At the same time, the aggressiveness necessary for society towards "outsiders" - animals that are not part of the group, is not suppressed. Secondly, authority is associated with a high position in the hierarchy; the behavior of a high-ranking animal in the hierarchy influences the behavior of the group much more than the behavior of a low-standing animal. For example, if a young jackdaw gets scared, its screams will have no effect on the flock, but if an old "high rank" jackdaw flies up, the whole flock will follow. Irwen de Voor describes how a herd of baboons in the open savannah found themselves in the vicinity of a lion. Young males immediately surrounded the herd, and the gray-haired, toothless leader alone scouted the location of the lion,

Let's return to the relationship between hierarchy and aggressiveness. In animal society, there are continuous clashes in the struggle for higher status in the hierarchy, and aggressiveness is most pronounced between individuals with a similar status. Other animals are also involved in skirmishes, and for the alpha, in the collision of two lower-standing individuals, the enemy naturally becomes the strongest, i.e. the strong protect the weak members of society.

On the other hand, as we know from our own experience, aggressiveness can destroy society and there are many mechanisms that neutralize these manifestations of it.

For example, rats of the same flock have a common scent that suppresses aggressiveness between them. It is worth isolating the rat from the flock for just a few days, as it loses this smell. If returned to the flock, she will be subject to an immediate fierce attack, like any alien rat.

In this regard, the behavior that Lorentz calls "moral-like" is developed. Its incentives are, of course, different from human morality - they are closer to the taboo of primitive societies - but the function is the same.

The so-called tournaments are a prime example. Their goal is to find out which of the two opponents is the strongest and at the same time prevent the weakest from taking too much damage. A whole gamut of behavioral mechanisms has been developed here. So, many fish show themselves to each other for a long time, spreading their fins, taking a pose that emphasizes their size. As a result, the weaker, convinced of the superiority of the enemy, has the ability to evade the battle.

The heavily ritualized deer tournament has two phases. The first consists, as in fish, in a "demonstration", with the opponents passing in front of each other, lowering and raising their horns. In the second phase, they intertwine with horns and push each other. Sometimes one of the deer is ready to go to the second phase earlier than the other, and then his antlers are against the unprotected side of the enemy. But he immediately stops rooted to the spot, then raises his horns and again begins a "demonstration" until both opponents simultaneously pass to the second phase of the tournament.

This kind of braking is not limited to tournaments. For example, they ensure that the older members of the group do not attack the younger ones. For example, chicks slow down the aggressiveness of their parents with their cries. In the experiment, stunned turkeys instantly killed their chicks. The same was confirmed by experiments with baits: if a stuffed chick is lowered into the nest on a string, the bird will violently attack it, but as soon as the chick squeak recorded on the tape is turned on, the attack suddenly stops with powerful braking.

The same type of inhibition prevents an attack on the "weaker sex" - mostly on females. This is well known to all in relation to dogs. The same is true for wolves. In some insects, males are the "weaker sex" - females are much stronger and larger. They can pose a serious threat to the male. For example, female praying mantis often eat the male at the time of fertilization. The mechanism worked out here is "presenting a gift". The male brings something edible to the female and thus distracts her attention at the right time. This behavior gave rise to the ritual, i.e. turned into a symbol, and the gift may no longer contain anything edible. The ritual of presenting wedding gifts is widespread, not only among insects, but also among birds.

Actions that cause the inhibition of aggression are called appeasement actions. Sometimes they are very dramatic. For example, during the most cruel fight of dogs or wolves, the defeated one freezes, turning his muzzle away from the enemy and substituting a jugular vein for him - i.e. the place for which they usually try to grab each other. The effect is instantaneous - the winner trembles with excitement, clicks his teeth in the air, but cannot grab the loser.

In human behavior, a number of appeasement actions can be distinguished. For example, bowing the head as a gesture of devotion is very close to the actions described above for pacifying wolves. Lorenz considers the act of appeasement and the evangelical "substitution of Lanita".

The nature of a number of appeasement actions is associated with the powerful stimuli described above that inhibit aggressiveness against females or offspring. Corresponding actions imitate either the postures of females in the process of copulation or infantile behavior, although in their new function these highly ritualized actions have nothing to do with either procreation or raising offspring. The first type includes, for example, the "postures of submission" in many monkeys, especially baboons. These are purely innate instinctive actions. A very small tame monkey, frightened by the new chairs brought into the room, performs a "substitution" ceremony for each of them. These actions are performed completely indifferently by both females and males, and are understood by both them and those to whom they are addressed as symbols of obedience.

Infantile behavior as an act of appeasement is especially widespread. It is, for example, licking the corner of the mouth in dogs - this is an imitation of the gesture with which puppies ask for food.

The appeasement ceremonies described above form a flexible language and can express the subtle nuances of relationships. In particular, they can serve to strengthen the bond between two equal members of the group, expressing a "friendly" relationship, as polite people write at the end of the letter "Your humble servant", although neither of them considers himself inferior to the other. These actions are especially common if the members of the group have not seen each other for some time and the connection between them has weakened. Therefore, they are called greetings. For example, storks, when greeting each other, put their beak on their backs. The wolves' greetings have such subtle nuances that their researcher Muri could not conclude on the basis of them about the hierarchy between the participants in the ceremony. Shaking hands in monkeys plays a similar role. Their origins are clearer, than in humans - one of the monkeys gives a hand with the same gesture (palm up) with which their cubs beg for food. Kissing monkeys when they meet come from feeding the cubs.

Of course, a number of human greetings have the same origin. This is conspicuous in connection with the removal of the hat - which mimics the removal of the helmet. A very important act of pacification in humans, which is also used as a greeting, is smiling and laughter, which, incidentally, are also found in monkeys.

Smiling relieves tension, laughing together creates a friendly atmosphere. They smile when they apologize. When a frightened person laughs nervously, his behavior is similar to that of a monkey, substituting its back for chairs. Later we will return to an interesting analysis of laughter.

The above forms of behavior only diminish or limit the effect of aggressiveness. The most powerful factor reorienting aggressiveness towards strengthening communities will be described in the next section.

#### **4. Individual communication**

All the concepts necessary to present the central idea of the theory described in this work are now described. It is about the origin of one of the most important creations of Nature - the individual bond between animals, from which human friendship, love and compassion eventually arose.

Not all animals, even social ones, distinguish each other individually. But already in fish this phenomenon can be detected experimentally. To do this, it is enough to take two pairs of fish of the same breed, which are in the same phase of the reproduction cycle, and swap the females. In some species, males do not react to replacement in any way. But, for example, in cichlids (tropical relatives of our perch), the reaction of the male is beyond doubt: he agrees to mate only with an individual female, chosen by him earlier. The experiments are described in detail in the translated book of Lorenz ([1], p. 42).

But often animals don't just know each other individually. There are connections between them, in many respects analogous to the ties of affection, friendship, love between people. These bonds are so strong that they often persist despite long separations. If animals are forcibly separated, they acquire all the signs of "unhappiness". With loud inviting cries, the animal wanders, looking for its "friend" day and night. This can be seen especially clearly in the example of the gray goose - the classical object of observation of Lorenz and his students. If the goose loses its companion, with whom it is bound by the bonds of "friendship," this immediately changes its entire behavior. His ability to stand up for himself drops dramatically. He often does not resist the geese attacking him at all and runs away from the weakest members of the flock. He soon occupies one of the lowest places in the hierarchy of the entire goose colony. Even his expression changes. In particular, the environment of the eyes, mainly under the eyes, undergoes exactly the same change that gives people the impression of an unhappy facial expression.

In order to understand the structure and origin of such individual relationships, consider the simplest example - the relationship between a male and a female in a number of coral fish. These animals are extremely aggressive and violently attack any member of their species approaching their territory. On the other hand, to give birth to offspring, they must meet in the male's nest. At first glance, an insoluble problem arises - how to block the aggressiveness of the male in a situation that should cause the most powerful outburst of aggressiveness - when another fish of the same species approaches the very center of its territory. Observations say that this is achieved through a sophisticated dance ritual. It can be seen that the decision is not easy - there are times when a dance can end with an attack on the female. But even in a favorable case, the movements of the male are very reminiscent of the actions of a threat and attack, and the movements of the female are the actions of fear and flight. In a ritualized, exaggerated form, the male attacks the female - but with one difference - he directs his attack not at her, but at the "imaginary opponent" next to her. (Thus, we are dealing here with the phenomenon of "redirected reaction." Everyone knows it from the example of an angry person who hits the table with his fist instead of the face of his opponent.) Having sinned with anthropomorphism, you can translate the meaning of this ritual into human language: "I

brave, strong and belligerent, but not in relation to you, but to our common enemy. " The dance clearly has a pacifying effect on the aggressiveness of the male and reduces the female's readiness to flee. But in order for coexistence to be possible, it must be repeated. It becomes a ritual, i.e. an innate instinct. He has, therefore, the ability to induce a state of search, the purpose of which is to find the appropriate stimuli, and this is for each of the spouses - his partner. Knowing what the strength and emotional coloring of the search state is, we can understand that spouses become necessary for each other. Moreover, each of them is able to perform the ritual only with their partner. This is how, in the simplest case, an individual bond is formed between two animals. According to Lorenz, it would be a wrong anthropomorphization to believe that the dance ritual is an expression of the connection between fish - it is the connection itself, that which binds them and attracts to each other. the ability to induce a state of search, the purpose of which is to find appropriate stimuli, and this is for each of the spouses - his partner. Knowing what the strength and emotional coloring of the search state is, we can understand that spouses become necessary for each other. Moreover, each of them is able to perform the ritual only with their partner. This is how, in the simplest case, an individual bond is formed between two animals. According to Lorenz, it would be a wrong anthropomorphization to believe that the dance ritual is an expression of the connection between fish - it is the connection itself, that which binds them and attracts to each other. the ability to induce a state of search, the purpose of which is to find appropriate stimuli, and this is for each of the spouses - his partner. Knowing what the strength and emotional coloring of the search state is, we can understand that spouses become necessary for each other. Moreover, each of them is able to perform the ritual only with their partner. This is how, in the simplest case, an individual bond is formed between two animals. According to Lorenz, it would be a wrong anthropomorphization to believe that the dance ritual is an expression of the connection between fish - it is the connection itself, that which binds them and attracts to each other. Moreover, each of them is able to perform the ritual only with their partner. This is how, in the simplest case, an individual bond is formed between two animals. According to Lorenz, it would be a wrong anthropomorphization to believe that the dance ritual is an expression of the connection between fish - it is the connection itself, that which binds them and attracts to each other. Moreover, each of them is able to perform the ritual only with their partner. This is how, in the simplest case, an individual bond is formed between two animals. According to Lorenz, it would be a wrong anthropomorphization to believe that the dance ritual is an expression of the connection between fish - it is the connection itself, that which binds them and attracts to each other. Moreover, each of them is able to perform the ritual only with their partner. This is how, in the simplest case, an individual bond is formed between two animals. According to Lorenz, it would be a wrong anthropomorphization to believe that the dance ritual is an expression of the connection between fish - it is the connection itself, that which binds them and attracts to each other.

This example illustrates the general concept of Lorenz: the individual relationship between animals is a pacifying ritual, and one in which the initial, non-ritualized action, on the basis of which the ritual arose, served as an expression of aggressiveness.

Thus, creating communities of animals, Nature did not suppress, did not destroy the instinct of aggressiveness, which, it would seem, could destroy these communities. She not only retained aggressiveness and all its useful functions for the community, but also

reoriented it into a ritual that turned into a bond that unites animals. A more beautiful solution is hardly possible!

A striking example is the ritual of the wild geese, which Heinroth called "triumphant cry" (*Triumphgeschrei*). It has two parts. In the first part, one of the two partners participating in the ceremony (the stronger one) makes a symbolic attack on the "dummy" enemy. At the same time, he makes threatening sounds, the so-called "rumbling". In the second part, the goose returns to its partner. At the same time, he publishes a quiet gaggle and performs actions that are extremely similar to those of a threat. They differ from the latter only in that they are not directed directly at the partner, but slightly to the side.

Whereas in coral fish the dance ritual described above is closely associated with the formation of a married couple, the "triumphant cry" of geese plays a completely independent role. This connection is often established when a goose and a goose form a pair and may precede betrothal (i.e., agreeing to form such a pair, which is a year before fertilization and breeding of offspring). But a married couple can form without such a connection, but then they have more chances to break up. The chicks are also included in the bond established by the general performance of the "solemn cry" ceremony, so that it embraces the whole family. The newborn gosling already possesses the actions that form the basis of the "triumphant cry" ritual, more precisely, corresponding to the second part of the ritual. In chicks, these actions have the meaning of the pacifying actions of "greeting" and only later does the whole ritual take on its final form. As older couples prepare to grow their families in the spring and younger couples are busy courting, many unpaired geese form groups that develop bonds based on the ritual of "triumphant cry." This ritual can also bind two ganders, who then, thanks to mutual support, usually occupy a high place in the hierarchy. Thus, this ritual permeates the entire social life of geese, is its foundation. This ritual can also bind two ganders, who then, thanks to mutual support, usually occupy a high place in the hierarchy. Thus, this ritual permeates the entire social life of geese, is its foundation. This ritual can also bind two ganders, who then, thanks to mutual support, usually occupy a high place in the hierarchy. Thus, this ritual permeates the entire social life of geese, is its foundation.

Apparently, the same is the origin of the individual ties that connect people. However, it must be assumed that they are based on a large number of different rituals. One of them, apparently, is the laughter and smile, which we talked about above. An element of aggressiveness is clearly visible in laughter, expressed in the exposure of teeth. In the east, where the welcoming smile, apparently, has retained a more archaic form, they do not look into each other's eyes, but somewhat to the side - similar to the behavior of coral fish and geese in the second stage of the "triumphant cry" ritual. When two friends who have not seen each other meet for a long time, a welcoming smile often turns into loud laughter. Similarly, after a long separation, geese fall into the orgy of "triumphant cry". In both cases, it is necessary to strengthen the bonds weakened by long separation. Finally, the rhythmic sounds made when laughing are reminiscent of the sounds that many primates use to threaten the common enemy of the group. Laughter has a similar purely aggressive equivalent - ridicule.

## 5. A look at human society

In conclusion, about those views of Lorenz that most often meet with objections. It is about the application of his concepts to human society. Critics reproach him for underestimating the colossal abyss that separates humans from animals. Lorenz objects that he is fully aware of this, but his opponents do not realize how many features of the human psyche are inherited from animal ancestors - moreover, deep and highly valued features.

According to Lorenz, humanity is in a tragic situation. In any animal, the organs of its attack and the mechanisms of inhibition of aggression inherent in it are in balance. The wolf can easily kill his opponent in a fight, but he also has trouble-free actions of pacification. The hare does not have the teeth of a wolf, nor does it have mechanisms for inhibiting aggression. In man, this balance is disturbed by artificially made tools. Lorenz compares man to a hare who acquired the teeth of a wolf. As an animal, man was provided with an ample supply of pacifying reactions. These include - the action of screams of pain, suffering facial expressions, disgust caused by the sight of blood, splattered brains. Very few people are able to kill a person with the means that are innate to humans, which indicates the reliability of these mechanisms. The invention of the hand ax had already upset this balance. A person acquired a tool that his instinctive sphere simply did not know about and with which he could kill the enemy before he could turn on the innate mechanisms with shouts or other actions of pacification. This effect intensified even more when it became possible to kill a person without even seeing him, by pressing a button or signing a list of those sentenced to death.

Naturally, in parallel with the development of weapons, natural selection developed in human society, as well as in animal societies, mechanisms that block aggressiveness. A number of mechanisms typical for animals are embedded in the human psyche and culture. For example, the pacifying actions associated with surrender - removing the helmet, throwing a sword on the ground, are functionally similar and outwardly extremely similar to the corresponding actions of animals.

Finally, humanity has developed a new weapon against aggressiveness - conscious morality and a sense of responsibility.

Unfortunately, the development of instinctive actions that inhibit aggressiveness takes an enormous amount of time. The construction of tools, and especially activities based on the dissemination of knowledge through language and writing, like all actions based on understanding, occurs extremely quickly, in leaps and bounds.

Another factor acts in the same direction - it is in the social behavior of animals (including humans) that instincts play a much greater role than in such actions as obtaining food or building a dwelling. For example, jackdaws learn from experience and by learning what food to eat, where to look for it, what enemies to fear, in what places and from what material to build nests. In this respect, their behavior in villages and in

cities is completely different. But their relationship to each other within the pack does not differ in any way. This kind of conservatism of social behavior, explained by its saturation with instinctive actions, further exacerbates the gap between a person's social instinctive actions and the demands that his own life puts before them.

The second reason that aggressiveness in human society has gotten out of the control of innate instinctual mechanisms will also become clear if we apply the general considerations about the action of instincts that were stated earlier.

Like any instinct, aggressiveness has the property of spontaneity, which is associated with the phenomenon of lowering the threshold of excitation. In the form in which aggressiveness exists in modern mankind, it is, apparently, the result of development that took place hundreds of thousands of years ago, in the Paleolithic era. When humanity, thanks to weapons, clothing and its social organization, defeated the threat that threatened it to die out from hunger, cold or from attacks of large predators, the main factor of selection was the war for territory between small tribes. Aggressiveness developed in this way was needed at that time for a person to help him rush, forgetting about himself, to protect his tribe and family. In the "normal", peaceful conditions of modern society, there are much fewer causative agents of the instinct of aggressiveness. But here the law of lowering the level of arousal comes into play. Aggressiveness can be triggered in response to weaker and weaker pathogens. Moreover, a corresponding state of search arises, a desire arises to find a "legitimate" object for one's unreacted aggressiveness. This creates a fertile ground for wars and party strife, on which the demagogues are gathering their harvest. Not possessing, of course, theoretical knowledge in the psychology of behavior, they ideally master its laws empirically, in the same way as trainers master the laws of animal behavior. This creates a fertile ground for wars and party strife, on which the demagogues are gathering their harvest. Not possessing, of course, theoretical knowledge in the psychology of behavior, they ideally master its laws empirically, in the same way as trainers master the laws of animal behavior. This creates a fertile ground for wars and party strife, on which the demagogues are gathering their harvest. Not possessing, of course, theoretical knowledge in the psychology of behavior, they ideally master its laws empirically, in the same way as trainers master the laws of animal behavior.

According to the point of view of many sociologists and psychologists, the aggressiveness of modern mankind is a consequence of its painful development, something like a pathological symptom. For Lorenz, this view, as grim as it may seem, actually underestimates the danger of aggressiveness. It is precisely the fact that aggressiveness is not a reaction to certain external conditions, but a spontaneous instinct that makes it especially dangerous. Humanity is not militant and aggressive because it is divided into warring states and parties, it is precisely because this social structure gives rise to pathogens that stimulate social aggressiveness.

From this perspective, the future of humanity may seem hopeless. Lorenz, however, does not take this view. Humanity is not in our time for the first time faced with the

discussed dangers. If we imagine our ancestor, extremely excitable and able to kill his neighbor with one blow of a hand chopper, it seems a miracle that humanity still exists. However, it found means to prevent the destructive effects of aggressiveness. And above all, success was associated with the very property of man, which gave him the opportunity to create a weapon - the mind, which gave rise to a conscious morality, a sense of responsibility and understanding of the consequences of his actions. The danger of the "anonymous" nature of human society, where aggressiveness should be blocked in relation to personally unfamiliar members of society, also not new to nature. In "anonymous" societies, group signals develop, such as the smell of a flock. People also have this ability to identify themselves with unfamiliar members of society through signals that can be abstract symbols and ideals.

Lorenz gives an impressive example of an extremely important instinctual action, which shows how all the factors discussed above function. This is the act of protecting one's social group, which is accompanied by the subjective experience of "inspiration". It arises in situations that a person sees as a threat to his family, social group, or sacred ideals. This behavior can be characterized by the following features. Bulging of the chest, lifting the shoulders, slightly turning the arms with the elbows forward, clenching the fists, raising the head, protruding the chin, clenching the jaws, furrowing the eyebrows, which creates the familiar "hero face". At the same time, a chill runs along the back (and, as detailed observations show, on the upper arms). The person feels as if torn out of everyday life, he is ready to give up everything in order to fulfill his sacred duty. All critical abilities are weakened, and arguments against actions that instinct calls for not only do not seem to be effective, but appear base and dishonorable. This state is facilitated by music, singing, loud screams.

In every detail, similar behavior can be observed in chimpanzees when an enemy threatens his family or social group. The poses involved are a typical "demonstration", the purpose of which is to appear larger and more terrifying to the enemy. For the same purpose, the arms are slightly bent and twisted - in order to turn them with the hairiest part and appear larger. In humans, this gesture is a rudiment. Finally, "sacred awe" comes from the hairs on the back and shoulders standing on end for the same "demonstration." In humans, it is also almost a rudiment. As for singing, chimpanzees also emit rhythmic sounds in this state.

The above is not at all intended to represent "inspiration" with a base or shameful state - it is in this state that people perform many of the noblest deeds. Among the causative agents of the "state of inspiration" in the process of history included the threat to very abstract ideals: homeland, faith ...

And finally, the most powerful spiritual weapon of human society is the process of reorientation of aggressive actions in the bonds that unite people, which we described in the previous paragraph.

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### Conclusion

Ethology, it seems to me, makes it possible to look at human society from a new and very important point of view. And it is far from only because people carry in themselves the enormous heritage of their animal ancestors. And first of all "by analogy", as a manifestation of the unity of those forms of organization of living things that Nature uses (and human society is undoubtedly something living). How not to explain this unity: as a result of a single selection mechanism underlying evolution, as a manifestation - according to the idea of Agassiz - the thinking of the Divine, or in some other way. Now we are usually offered as a model something dead, some kind of cybernetic scheme. And here we can compare society with a living community, and more simple (at least quantitatively smaller), more accessible to analysis. And immediately many strikingly beautiful ones open up,

First of all, this is the division of forms of behavior into those acquired by training and instinctive ones. Moreover, instinctive actions are associated with a powerful emotional uplift, belong to the most important areas of life and offer solutions that could be explained only by the work of a super-powerful intellect. Similarly, in human society there is a huge area of "norms of behavior" that regulate the main aspects of social life and do not arise as a result of rational comprehension of the problem, in a way incomprehensible to researchers. And at the same time, they are perceived as something absolutely true, cause a powerful rise in feelings, their rational criticism is repelled. These include: morality, religion (up to the most primitive forms), many social concepts and teachings. One of the most striking examples of such "norms of behavior" is "exogamy" - a system of sometimes very complex marital prohibitions that prevent marriages between close relatives in primitive societies. Of course, the primitives had no idea about the harmful genetic consequences of consanguineous marriages: their prohibitions were taboo in nature. Of the more modern phenomena, socialism, it seems to me, has a number of signs of instinct: it evokes a surge of emotions, does not respond to criticism, easily reconciles with gross logical contradictions, ignores the experience of previous attempts to implement this doctrine.

The process of establishing modern parliamentary democracy is also in keeping with the spirit of the environmental concepts described above. This happened in England as a result of two revolutions (1640-60 and 1688). The two parties that emerged - the Whigs and the Tories - were the heirs of the warring parties in the civil war - the "round-headed" Puritans and the "cavalier" monarchists. But the civil war took on a "ritualized" form of party struggle and a system of elections arose, built on the principle of animal "tournaments". The aggressiveness of both parties was not suppressed, but reoriented in a direction beneficial to society. On the other hand, the monarchy was not destroyed,

but took on a ritual character. As such, it turned out to be a bond that unites the entire people, a symbol of their love for their state. It is hardly accidental that the countries in which political life is the most stable are those who have preserved the monarchical system in a constitutional form - such as England, Sweden, Norway. In his memoirs, Churchill suggests that the fate of Germany could have been different if the monarchy had been preserved in it in 1918.

The same circle of problems lies, it seems to me, at the heart of one of the greatest works of literature: Aeschylus' trilogy "Oresteia". Its content is as follows: the son of Agamemnon, Orestes, on the orders of Apollo, kills his mother Clytemnestra in order to avenge her father, whom she killed. Orestes is pursued by the goddesses of vengeance Erinia: monstrous demons born from the blood of the slain, with a foul breath, blood dripping from his eyes. Erinyes overtake Orestes in Athens at the temple of Pallas Athena. Apollo and Athena come to his aid. All agree to choose the Athenian Council of Elders, the Areopagus, as the arbiter. The Areopagus cleans Orestes from the sin of murder, and the angry Erinias threaten to send famine and pestilence to the city for this. But Athena persuades them to agree to an unexpected decision. Erinyes remain to live in Athens, but turn from terrible goddesses of revenge into "

Caring gardener and discerning  
I love the valiant and kind color and growth.  
This is what you care about.

The tragedy ends in choruses, in which the Eumenides call on the city for happiness and "speak" it out of evil:

Brothers let brothers not destroy,  
Demanding blood for blood.  
Joy in return for joy, A  
common thing to love, To  
hate with one heart,  
Better there is no medicine for people.

Many interpretations of the trilogy have been proposed. Here you can see the triumph of the law over blood feud. The German philologist Bachoven interpreted it as a reflection of the process of replacing the maternal clan with the paternal clan. It is natural to associate her with the modern political struggle of Aeschylus: the aristocratic Areopagus with a democratic popular assembly. It is clear that the trilogy is about the fundamental drama of life: the replacement of the old with the new. And the main principle - the transformation of the avengers Erinius into the benefactors of Eumenides - coincides with the main idea of Lorenz about the transformation of the instinct of aggression into a bond that strengthens society. Do I need to say how important it is for us, right now, to think over these ideas? How important it is for us to turn Erinius, born of our history, into Eumenides!

*Written in 1967.*